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Criminal Justice and Behavior 2005 32: 278

DOI: 10.1177/0093854804274371

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JUVENILE DECERTIFICATION

Developing a Model for Classification and Prediction

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This study considers the impact of data from the Psychopathy Checklist: Youth Version (PCL:YV), the Massachusetts Youth Screening Instrument (MAYSI), and the Youth Level of Service Case Management Inventory (YLS/CMI) on the court's decision whether to decertify an adolescent defendant back to juvenile court or keep the defendant in criminal court. There are significant positive relationships between certification status and age; number of violent charges; total charges; PCL:YV, YLS/CMI, and MAYSI total scores; and select subscales of the MAYSI and the YLS/CMI. Significant differences are found between those who remained in the adult criminal justice system and those who were decertified to the juvenile justice system for age, YLS/CMI total score, and the Prior and Current Offenses and Dispositions and Personality and Behavior subscales of the YLS/CMI. The combination of PCL:YV total score and select subscales from the MAYSI and YLS/CMI provided the most accurate model for predicting certification status.

Keywords: juvenile decertification; classification; prediction; psychopathy; risk factors

Juvenile crime and violence are of significant concern in our society. Overall trends in juvenile violent crimes arrest data during the past decade suggest that juveniles are committing a substantial proportion of violent offenses (Bureau of Justice Statistics, 1998; J. C.

CRIMINAL JUSTICE AND BEHAVIOR, Vol. 32 No. 3, June 2005 278-301

DOI: 10.1177/0093854804274371

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Howell, Krisberg, & Jones, 1995; Office of Juvenile Justice & Delinquency Prevention [OJJDP], 1999), a trend that is consistent with recent data provided by the U.S. Department of Justice (FBI, 1998; OJJDP, 1999). A variety of influences have been cited as contributing to juvenile offending, including access to firearms, gang involvement, adverse social conditions, and victimization (J. C. Howell et al., 1995; OJJDP, 1999). Research suggests that serious, violent, and chronic juvenile offenders are the product of multiple problems and risk factors occurring across these domains and that the risk of juvenile offending is increased by exposure to multiple risk factors (J. C. Howell et al., 1995; OJJDP, 1999).

A core set of risk factors are often described as associated with juvenile delinquency and recidivism. These factors include age at first referral or adjudication, number of prior referrals or arrests, number of out-of-home placements or institutional commitments, academic achievement, school behavior and attendance, substance abuse, family stability, parental control, and peer relationships (Cornell, Peterson, & Richards, 1999; Farrington & Hawkins, 1991; Heilbrun, 1997, 1999; OJJDP, 1999; Wiebush, Baird, Krisberg, & Onek, 1995). Substance abuse, especially poly-substance abuse, appears to be strongly associated with juvenile delinquency and recidivism (Elliot, Huizinga, & Ageton, 1985; OJJDP, 1999; Truchfield, Clayton, & Logan, 1982). Other influences cited include early onset of delinquency (Loeber & Dishion, 1983; OJJDP, 1999; Tolan, 1987); aggressive behavior in school (Huesmann, Eron, Leftkowitz, & Walder, 1984; Loeber & Dishion, 1983); negative peer pressure; lack of family support and the presence of family conflict; hyperactivity, impulsivity, and attention difficulties in conjunction with conduct problems and aggression; procriminal beliefs and attitudes; low levels of educational and vocational skills; personality and temperament (Grisso, 1998; Hoge & Andrews, 1996; Loeber, 1990; Loeber & Dishion, 1983); and antisocial parenting and role models (Hoge & Andrews, 1996; Wiebush et al., 1995).

AUTHOR NOTE: *This study was part of a doctoral dissertation conducted by the first author. It was supported by a dissertation grant from the American Academy of Forensic Psychology.*

PROSECUTION OF JUVENILES AS ADULTS

Concern about juvenile crime has led legislatures to revise procedures for prosecuting adolescents charged with offending. One such change has involved the expansion of the prosecution of juveniles in criminal courts, considering them as adult defendants. These laws generally fall under one of three distinct categories: the judicial waiver model, the prosecutorial waiver model, and the legislative exclusion model.

The judicial waiver model is the oldest and remains the most common model in the United States. Under this model, adolescents charged with offenses are subject to juvenile court jurisdiction unless the prosecution petitions the juvenile court to waive jurisdiction and transfer the juvenile to criminal court. If a transfer petition is filed, the court considers applicable criteria (typically prior exposure to the juvenile justice system and amenability to treatment in that system) in deciding whether the juvenile should be transferred (Heilbrun, Leheny, Thomas, & Huneycutt, 1996). Research on judicial waiver statutes has focused on the frequency of transfer decisions, the demographic characteristics of transferred juveniles, the factors that influence a transfer decision, and the sentencing outcomes of transfer decisions. Juveniles who transfer to adult court tend to be between the ages of 15 and 17, charged with more serious offenses, younger at the time of first contact with the juvenile system, arrested more frequently, and to have more educational and academic deficits than juveniles who are not transferred to adult court (Barnes & Franz, 1989; Champion, 1989; Fagan, Forst, & Vivona, 1987; Houghtalin & Mays, 1991; Mays & Houghtalin, 1992; Poulos & Orchowsky, 1994).

Prosecutorial waiver is the second approach to transferring juveniles into the adult system. This approach grants concurrent jurisdiction over certain alleged offenses to both the juvenile and criminal court and provides the prosecutor with discretion to decide where the charges will be filed (Bishop & Frazier, 1991; Bishop, Frazier, & Henretta, 1989). Research in the area of prosecutorial waivers is limited. One series of studies compared the impact of transfer by examin-

ing the recidivism rates of juveniles sent to the criminal system. Investigators reported that the majority of cases filed directly in the adult criminal system involved males older than the age of 17 who had committed property crimes (Bishop & Frazier, 1991; Bishop et al., 1989). One fourth of the offenders with charges filed directly in the criminal system were first-time offenders, and an additional one third had no more than two prior referrals (Bishop et al., 1989). Considered with the finding that in the majority of cases, the full range of juvenile justice interventions had not been exhausted with direct file juveniles, these results suggest that the prosecutorial waiver method does not identify the juvenile offenders who have committed the most violent crimes and who have demonstrated an inability to benefit from the juvenile justice system (Bishop & Frazier, 1991; Dodds, 2000).

Under the legislative exclusion model, a state's legislature defines certain offenses that automatically result in initial charges for a juvenile being filed in the adult system. Critics of this model argue that it sweeps too broadly and sends a disproportionate number of juveniles who could benefit from treatment in the juvenile justice system to the adult criminal justice system (Osbin & Rode, 1984). Although used by about half of the jurisdictions in the United States, there is little research on the effectiveness and impact of this model. The limited research that has been conducted focuses on the characteristics of juveniles sent to the adult system and predictors of when a juvenile would be more likely to fall under the legislative exclusion scheme. Research in this area suggests that this model does not identify the most violent youths or those who had exhausted all interventions in the juvenile justice system (Dodds, 2000; Osbin & Rode, 1984; Singer, 1993).

The present study considers the impact of certain risk factors prominent in the literature and their relationship to juvenile certification status. These risk factors were represented and operationalized by integrating three instruments (the Psychopathy Checklist: Youth Version [PCL:YV], the Massachusetts Youth Screening Instrument [MAYSI], and the Youth Level of Service Case/Management Inventory [YLS/CMI]) into a classification and prediction model.

METHOD

PARTICIPANTS

The sample for the present study consisted of juvenile defendants who were represented by the public defender (the Defender Association of Philadelphia) on charges initially filed between 1996 and 2000 in the adult criminal justice system under an expanded exclusion statute (Juvenile Act of 2002).¹ Participants had been initially referred for evaluation to a university-based clinic run through the Medical College of Pennsylvania and Hahnemann University Department of Clinical and Health Psychology.

Data reviewed in this study were archival, obtained with permission of the university clinic and the Defender Association of Philadelphia. Data on 95 participants were reviewed as part of this study. Of these, 67 were African American (70.5%), 16 were Hispanic (16.8%), and 12 were Caucasian (12.6%). The participants ranged in age from 14 to 18, with a mean age of 16.38 ($SD = 0.85$). Of the 95 participants, 43 were decertified to the juvenile justice system (45.3%), and 52 (54.7%) remained certified in the adult criminal justice system. Seventy-three participants (76.8%) had prior contact with the juvenile justice system.

Two variables were constructed from the data on initial charges. The first was total charges; the second was total violent charges. The total charges variable was constructed to provide a proxy measure of criminal activity, and the violence variable was constructed to provide a proxy measure of charges that involved violence on the part of the participant. The Defender Association of Philadelphia also provided the certification status of each participant and whether he or she remained in the adult criminal justice system or was decertified back to the juvenile justice system.

Participants were charged with a mean of 7.99 ($SD = 2.16$) offenses, with a range of 2 to 13. The modal total charges score was 9, with six participants (27.1%) receiving that score. To assess the severity of charges, participants also received a violent charges score, which was based on the number of charges filed that were consistent with the serious acts of violence definition used in the MacArthur Risk Assessment Study: "battery that resulted in physical injury, sex-

ual assaults, assaultive acts that involved the use of a weapon, or threats made with a weapon in hand” (Monahan et al., 2001, p. 40). The number of charges brought against the participant that met the MacArthur definition of a violent act (e.g., murder, attempted murder, assault, aggravated assault, robbery, sexual assault, indecent assault, rape, arson, carjacking, kidnapping, and weapons charges) was summed to obtain the total violence score.

PROCEDURE

We conducted a review of the files on the participants that were maintained by the university clinic and those maintained by the Defender Association of Philadelphia. These sources provided demographic data, criminal history, and relevant diagnostic and risk-related information. Using all available information, the YLS/CMI and the PCL:YV were completed on a file review basis by trained graduate research assistants. The MAYSI was administered to all participants as part of the assessments conducted by the clinic.

The MAYSI (Grisso & Barnum, 1998) is a screening tool used in juvenile justice settings to identify symptoms of mental and emotional disturbance or distress. It has nine scales: (a) Substance Dependence and Abuse, (b) Anger, (c) Anxiety, (d) Depression, (e) Aggressiveness, (f) Bodily Aches and Pains Associated With Emotional Distress, (g) Suicide, (h) Serious Mental Disorder, and (i) Exposure to Traumatic Events (Grisso & Barnum, 1998).

The YLS/CMI is a risk and needs tool that focuses on both overall risk and associated risk-reduction needs (Hoge & Andrews, 1994). The first scale, Prior and Current Offenses and Disposition, provides an estimate of overall reoffense risk. The remaining seven scales address deficits in the areas relevant to offending: (a) Family Circumstances and Parenting, (b) Education and Employment, (c) Peer Relations, (d) Substance Abuse, (e) Leisure and Recreation, (f) Personality and Behavior, and (g) Attitudes and Orientation (Hoge & Andrews, 1996).

The PCL:YV is an adaptation of the Psychopathy Checklist–Revised (PCL-R) for adolescents, assessing factors associated with recidivism and interpersonal violence (Forth, Kosson, & Hare, 1996). A growing body of research supports the strength of the relationship

between PCL-R score and subsequent offending and violent offending in the community among adults (Cornell et al., 1996; Kosson, Kelly, & White, 1997; Ogloff, Wong, & Greenwood, 1990; Salekin, Rogers, & Sewell, 1996). Similar research on the PCL:YV continues to develop, and the psychometric properties of the instrument have been the focus of considerable debate (Edens, Skeem, Cruise, & Cauffman, 2001; Kosson, Cyterski, Steuerwald, Neumann, & Walker-Matthews, 2002; Seagrave & Grisso, 2002). Studies using the PCL:YV demonstrate a link between violent criminal behavior, earlier onset of antisocial behavior, increased symptoms of conduct disorder, and higher levels of substance use (Edens et al., 2001; Forth & Burke, 1998; Kosson et al., 2002; Mailloux, Forth, & Kroner, 1997). Despite these promising results, it is currently unclear if the PCL:YV adequately captures the construct of adolescent psychopathy, assuming it exists at all (Frick, 2002; Kosson et al., 2002; Seagrave & Grisso, 2002). Specific criticisms in this area have focused on the scoring criteria and psychometric properties of the PCL:YV and the uncertain nature of the construct of adolescent psychopathy itself (Edens et al., 2001; Hart, Watt, & Vincent, 2002; Kosson et al., 2002; Seagrave & Grisso, 2002).

RESULTS

Although there is no MAYSI total score, the total number of *yes* responses was used as a proxy total score and analyzed as a continuous variable representing the aggregate level of reported disturbance. MAYSI total scores ranged from 0 to 44, with a mean score of 16.90 ($SD = 11.07$). The modal MAYSI total score was 10, with six participants (6.3 %) receiving that score. Univariate analysis revealed that the MAYSI total scores followed a normal distribution, Kolmogorov-Smirnov $\chi^2(95) = .77, p = .60$.

The YLS/CMI total scores ranged from 1 to 36, with a mean score of 20.14 ($SD = 7.70$). The modal YLS/CMI total score was 17, with 10 participants (10.5%) receiving that score. Univariate analysis revealed that the YLS/CMI total scores followed a normal distribution, Kolmogorov-Smirnov $\chi^2(95) = .712, p = .69$. Intraclass correlation coefficients were used to examine interrater reliability for YLS/

CMI total scores (Shrout & Fleiss, 1979). In this sample, $r = .82$ and was significant at the $p < .05$ level, suggesting adequate interrater reliability for the YLS/CMI total scores.

The PCL:YV total scores ranged from 0 to 20, with a mean score of 9.12 ($SD = 3.88$). Univariate analysis revealed that the PCL:YV total scores followed a normal distribution, Kolmogorov-Smirnov $\chi^2(95) = .707, p = .70$. Intraclass correlation coefficients were used to examine interrater reliability for PCL:YV total scores (Shrout & Fleiss, 1979). In this sample, $r = .84$ and was significant at the $p < .01$ level, suggesting adequate interrater reliability for the PCL:YV total scores.

Exploratory correlations were conducted as an initial step for determining which variables might be worthy of further analyses. These correlation analyses focused on certification status and its relationship to age; PCL:YV, YLS/CMI, and MAYSI total scores; MAYSI and YLS/CMI subscale scores; number of violent charges; and total charges. Pearson Point-Biserial correlation analysis revealed significant relationships between certification status and age ($r_{pb} = .28, p = .006$); number of violent charges ($r_{pb} = .24, p = .02$); PCL:YV ($r_{pb} = .23, p = .03$), YLS/CMI ($r_{pb} = .28, p = .007$), and MAYSI ($r_{pb} = .22, p = .03$) total scores; the Alcohol and Drug ($r_{pb} = .28, p = .006$) and Angry and Irritable ($r_{pb} = .21, p = .045$) subscales of the MAYSI; and the Prior and Current Offenses and Dispositions ($r_{pb} = .30, p = .003$), Peer Relations ($r_{pb} = .23, p = .02$), Substance Abuse ($r_{pb} = .24, p = .02$), Personality and Behavior ($r_{pb} = .32, p = .002$), and Attitude and Orientation ($r_{pb} = .27, p = .008$) subscales of the YLS/CMI. These results suggest that these variables might be useful in distinguishing participants who were decertified from those who were not and in predicting certification status.

The next analysis involved independent sample t tests for the above variables, with certification status (juvenile or adult criminal justice system) as the grouping variable (see Table 1). An initial independent sample t test was conducted to compare mean age, total charges, total violent charges, and PCL:YV, YLS/CMI, and MAYSI total scores. Using a more conservative significance criterion to account for family-wise error ($p = .05 / 6 = .008$; D. C. Howell, 1992), a comparison was made between the group means for the participants who remained certified in the adult criminal justice system ($n = 52$) and the group means for those who were decertified back to the juvenile justice system ($n =$

TABLE 1: Independent Sample *t* Test Results

Variable	Juvenile		Adult		t	p
	M	SD	M	SD		
Age	16.1	0.88	16.6	0.77	-2.83	.006 ^a
Total charges	7.5	2.1	8.4	2.2	-1.88	.064
Violent charges	3.5	1.4	4.2	1.3	-2.37	.020
PCL:YV total score	8.2	3.7	9.9	0.54	-2.27	.026
MAYSI total score	14.3	11.6	19.2	10.2	-2.18	.032
YLS/CMI total score	17.8	7.7	22.1	7.2	-2.78	.007 ^a
MAYSI subscales						
Alcohol and Drug	1.9	2.5	3.4	2.6	-2.81	.006
Somatic Complaint	2.6	2.2	3.1	1.9	-1.28	.210
Suicide Ideation	1.1	1.8	0.88	1.6	0.534	.595
Thought Disturbance	0.63	0.95	0.76	1.0	-0.635	.527
Angry and Irritable	1.9	2.0	2.9	2.2	-2.03	.045
Fighting	0.88	1.2	1.2	1.2	-1.18	.243
Traumatic Experiences	2.1	1.4	2.4	1.3	-1.33	.187
Depressed Mood	3.9	3.6	4.9	3.5	-1.33	.186
Anxiety	1.6	1.5	1.9	1.6	-0.793	.430
YLS/CMI subscales						
Prior and Current Offenses and Disposition	1.0	1.2	1.9	1.4	-3.03	.003 ^a
Family Circumstances and Parenting	2.8	1.8	2.9	1.7	-0.337	.737
Education and Employment	3.8	2.0	3.9	1.9	-0.241	.810
Peer Relations	2.6	1.5	3.2	-2.24	1.1	.028
Substance Use	1.8	1.9	2.6	-2.30	1.5	.024
Leisure and Recreation	1.8	0.98	2.0	-1.21	0.88	.229
Personality and Behavior	2.5	1.4	3.5	-3.23	1.6	.002 ^a
Attitudes and Orientation	1.5	0.99	2.2	-2.72	1.3	.008

a. Statistically significant difference after accounting for family-wise error.

43). Significance testing (Levene's *F* for equality of variance) suggested that equal variances were present between the samples across each of the independent variables. The results of this analysis revealed a significant difference between these two groups with respect to mean age, $t(95) = -2.83$, $p = .006$, and mean YLSCMI total score, $t(95) = -2.78$, $p = .007$. Participants who remained in the adult criminal justice system were significantly older and scored significantly higher on the YLSCMI.

The next analysis involved an independent sample *t* test for the nine MAYSI subscales, with certification status as the grouping variable

($p = .05 / 9 = .005$; equal variances present between the samples across each of the independent variables). The results of this analysis did not reveal significant differences between these two groups. It should be noted, however, that the results from the Alcohol and Drug subscale approached statistical significance ($t = -2.81, p = .006$), suggesting higher levels of substance use among those participants prosecuted in the adult criminal justice system.

An additional independent sample t test was conducted with the same grouping variable to determine if there were significant differences between the two groups on the eight specific YLS/CMI subscale scores ($p = .05 / 8 = .006$). Significance testing suggested that equal variances were present between the samples across each of the independent variables for six of the subscales (Prior and Current Offenses and Dispositions, Family Circumstances and Parenting, Education and Employment, Leisure and Recreation, Personality and Behavior, and Attitudes and Orientation). Two independent variables, peer relations ($F = 7.47, p = .008$) and substance abuse ($F = 4.09, p = .05$), were analyzed assuming unequal variances. The results of the analysis revealed a significant difference between the two groups on the Prior and Current Offenses and Dispositions, $t(95) = -3.01, p = .003$, and Personality and Behavior, $t(95) = -3.23, p = .002$, subscales of the YLS/CMI. Participants who remained in the adult criminal justice system scored significantly higher on each of these subscales. A higher score on the Prior and Current Offenses and Dispositions subscale reflects a higher number of prior and current charges, whereas a higher score on the Personality and Behavior subscale suggests greater risk-related needs in this area of functioning.

Further analyses were conducted to explore the utility of these instruments as predictors of certification status. Initially, PCL:YV, MAYSI, and YLS/CMI total scores were regressed independently (see Tables 2 to 4). Assumption testing revealed that the error values were not normally distributed, indicating a violation of the normality assumption. Because of the dichotomous outcome variable used in logistic regression, however, a violation of normality was expected (Menard, 1995). A Box-Tidwell transformation reported that the assumptions of linearity and colinearity were met (Menard, 1995). Results of the logistic regression analyses using PCL:YV total scores indicated that the model was significant, model $\chi^2(1) = 5.13, p = .02$,

TABLE 2: Logistic Regression: PCL:YV Total Score and Certification Status

Variable	B	SE	Wald	df	p	Exp(B)
PCL:YV	.126	.058	4.743	1	.029	1.134
Constant	-.947	.558	2.881	1	.090	0.388

Note. PCL:YV = Psychopathy Checklist: Youth Version. Model $\chi^2(1) = 5.13$, $p = .02$, overall classification rate = 57.89% (juvenile percentage correct = 41.9%, adult percentage correct = 71.2%), and Nagelkerke $R^2 = .070$.

TABLE 3: Logistic Regression: YLS/CMI Total Score and Certification Status

Variable	B	SE	Wald	df	p	Exp(B)
YLS/CMI	0.077	.030	6.797	1	.009	1.080
Constant	-1.355	.628	4.662	1	.031	0.258

Note. YLS/CMI = Youth Level of Service/Case Management Inventory. Model $\chi^2(1) = 7.50$, $p = .006$, overall classification rate = 67.37% (juvenile percentage correct = 55.8%, adult percentage correct = 76.9%), and Nagelkerke $R^2 = .102$.

TABLE 4: Logistic Regression: MAYSI Total Score and Certification Status

Variable	B	SE	Wald	df	p	Exp(B)
MAYSI	.043	.020	4.437	1	.035	1.004
Constant	-.560	.393	2.024	1	.155	0.571

Note. MAYSI = Massachusetts Youth Screening Instrument. Model $\chi^2(1) = 4.75$, $p = .03$, overall classification rate = 63.40% (juvenile percentage correct = 58.1%, adult percentage correct = 68.0%), and Nagelkerke $R^2 = .066$.

overall classification rate = 57.89%, the model accounted for approximately 7% of the variance in the outcome measure, and that the PCL:YV total score was positively related to certification status. This suggests that the PCL:YV total score was moderately and positively associated with certification outcome status and that those participants who scored higher on the PCL:YV were more likely to remain in the criminal justice system.

The regression results for the YLS/CMI total score and certification status indicate that the model was significant, model $\chi^2(1) = 7.50$, $p = .006$, overall classification rate = 67.37%, the model accounted for approximately 10% of the variance in the outcome measure, and that

the YLS/CMI total score was positively related to certification status. This suggests that the YLS/CMI total score was moderately and positively associated with certification outcome status and that those participants who scored higher on the YLS/CMI were more likely to remain in the criminal justice system.

The regression results for the MAYSI total score and certification status indicated that the model was significant, model $\chi^2(1) = 4.75$, $p = .03$, overall classification rate = 63.4%, the model accounted for approximately 7% of the variance in the outcome measure, and that the MAYSI total score was positively related to certification status. This suggests that the MAYSI total score was moderately and positively associated with certification outcome status and that those participants who scored higher on the MAYSI were more likely to remain in the criminal justice system.

As may be seen, each model was significant and the results suggest that each instrument had some utility for predicting certification status. Independently, the YLS/CMI appeared to have the most predictive utility (overall classification rate = 67.4%), followed by the MAYSI (overall classification rate = 63.4%), and the PCL:YV (overall classification rate = 57.9%).

Next, a stepwise logistic regression was conducted to assess the predictive utility of all three instruments considered simultaneously (see Table 5). For the first step of the analysis, PCL:YV total score was entered as the independent variable. Results of the logistic regression analyses using PCL:YV total score indicated that the model was significant, model $\chi^2(1) = 5.13$, $p = .02$, overall classification rate = 57.89%, the model accounted for approximately 7% of the variance in the outcome measure, and the PCL:YV total score was positively related to remaining in the criminal justice system.

The YLS/CMI total score was the second variable entered into the equation. The model was significant at the second step, model $\chi^2(2) = 8.34$, $p = .015$, overall classification rate = 65.3%, and accounted for approximately 11% of the variance in the outcome measure. Both the PCL:YV and YLS/CMI total scores were positively related to certification status. These findings suggest that the PCL:YV and YLS/CMI total scores predicted continued prosecution in the criminal justice system, and the addition of the YLS/CMI also improved the overall classification rate from 57.89% to 65.3%.

TABLE 5: Stepwise Logistic Regression (Final Model), PCL:YV, YLS/CMI, and MAYSI Total Score

Variable	B	SE	Wald	df	p	Exp(B)
PCL:YV	0.059	.068	0.764	1	.382	1.061
YLS/CMI	0.041	.037	1.206	1	.272	1.042
MAYSI	0.026	.022	1.360	1	.244	1.026
Constant	-1.622	.688	5.565	1	.018	0.197

Note. PCL:YV = Psychopathy Checklist: Youth Version; YLS/CMI = Youth Level of Service/Case Management Inventory; MAYSI = Massachusetts Youth Screening Instrument. Model $\chi^2(3) = 8.74, p = .03$, overall classification rate = 65.6% (juvenile percentage correct = 60.5%, adult percentage correct = 70.0%), and Nagelkerke $R^2 = .120$.

The MAYSI total score was entered in the third step of the analysis. The model was significant at the third step, model $\chi^2(3) = 8.74, p = .03$, overall classification rate = 65.6%, and accounted for approximately 12% of the variance in the outcome measure. All three instruments were positively related to certification status, and the addition of MAYSI total score improved the overall classification rate from 65.3% to 65.6%. Generally, these findings suggest that the PCL:YV, YLS/CMI, and MAYSI total scores in combination did not predict certification status with better accuracy than the YLS/CMI total score alone.

Further analyses were conducted to explore the utility of the MAYSI and YLS/CMI subscales as predictors of certification status (see Tables 6 to 12). Initially, each of the MAYSI subscales was regressed independently. The results of these analyses suggested that the Alcohol and Drug, model $\chi^2(1) = 7.65, p = .006$, overall classification rate = 63.4%, variance = 11%, and Angry and Irritable, model $\chi^2(1) = 4.13, p = .042$, overall classification rate = 59.1%, variance = 6%, subscales predicted certification status. Independently, both subscales were positively related to certification status, suggesting that participants with higher scores on these subscales were more likely to remain in the criminal justice system.

Next, these subscales were analyzed to explore the predictive utility of a model that included both subscales. The results of this analysis also produced a significant model, model $\chi^2(2) = 8.11, p = .017$, overall classification rate = 63.4%, variance = 11%. Both subscales

TABLE 6: Logistic Regression: Alcohol and Drug, and Angry and Irritable MAYSI Subscales

<i>Variable</i>	<i>B</i>	<i>SE</i>	<i>Wald</i>	<i>df</i>	<i>p</i>	<i>Exp(B)</i>
Alcohol and Drug	.228	.086	7.026	1	.008	1.256
Constant	-.446	.304	2.142	1	.143	0.640
Angry and Irritable	.202	.102	3.894	1	.048	1.223
Constant	-.335	.320	1.095	1	.295	0.716

Note. MAYSI = Massachusetts Youth Screening Instrument. For the Alcohol and Drug subscale, model $\chi^2(1) = 7.65, p = .006$, overall classification rate = 63.4% (juvenile percentage correct = 62.8%, adult percentage correct = 64.0%), and Nagelkerke $R^2 = .105$. For the Angry and Irritable subscale, model $\chi^2(1) = 4.13, p = .042$, overall classification rate = 59.1% (juvenile percentage correct = 51.2%, adult percentage correct = 66.0%), and Nagelkerke $R^2 = .058$.

TABLE 7: Logistic Regression: Alcohol and Drug, and Angry and Irritable MAYSI Subscales

<i>Variable</i>	<i>B</i>	<i>SE</i>	<i>Wald</i>	<i>df</i>	<i>p</i>	<i>Exp(B)</i>
Alcohol and Drug	.193	.099	3.775	1	.052	1.213
Angry and Irritable	.081	.120	0.461	1	.497	1.085
Constant	-.550	.343	2.576	1	.108	0.577

Note. MAYSI = Massachusetts Youth Screening Instrument. Model $\chi^2(2) = 8.11, p = .017$, overall classification rate = 63.4% (juvenile percentage correct = 65.1%, adult percentage correct = 62.0%), and Nagelkerke $R^2 = .112$.

TABLE 8: Logistic Regression: MAYSI Subscales

<i>Variable</i>	<i>B</i>	<i>SE</i>	<i>Wald</i>	<i>df</i>	<i>p</i>	<i>Exp(B)</i>
Alcohol and Drug	.243	.122	3.968	1	.046	1.275
Somatic Complaints	.025	.161	0.024	1	.878	1.025
Suicide Ideation	-.370	.200	3.409	1	.065	0.691
Thought Disturbance	.180	.310	0.338	1	.561	1.198
Angry and Irritable	.221	.184	1.446	1	.229	1.247
Fighting	-.197	.307	0.411	1	.522	0.821
Traumatic Experiences	.119	.202	0.349	1	.555	1.127
Depressed Mood	.038	.159	0.058	1	.810	1.039
Anxiety	-.150	.269	0.314	1	.575	0.860
Constant	-.827	.494	2.807	1	.094	0.437

Note. MAYSI = Massachusetts Youth Screening Instrument. Model $\chi^2(9) = 14.20, p = .12$, overall classification rate = 62.4% (juvenile percentage correct = 62.8%, adult percentage correct = 62.0%), and Nagelkerke $R^2 = .189$.

TABLE 9: Logistic Regression: Prior and Current Offenses and Dispositions, Peer Relations, Substance Use, Personality and Behavior, and Attitude and Orientation YLS/CMI Subscales

<i>Variable</i>	<i>B</i>	<i>SE</i>	<i>Wald</i>	<i>df</i>	<i>p</i>	<i>Exp(B)</i>
Prior and Current Offenses	.468	.165	8.004	1	.005	1.596
Constant	-.484	.313	2.399	1	.121	0.616
Peer Relations	.367	.166	4.890	1	.027	1.443
Constant	-.865	.523	2.731	1	.098	0.421
Substance Use	.284	.126	5.085	1	.024	1.329
Constant	-.453	.344	1.731	1	.188	0.636
Personality and Behavior	.456	.155	8.640	1	.003	1.578
Constant	-1.192	.504	5.582	1	.018	0.304
Attitudes and Orientations	.486	.189	6.596	1	.010	1.625
Constant	-.703	.402	3.061	1	.080	0.495

Note. YLS/CMI = Youth Level of Service/Case Management Inventory. For the Prior and Current Offenses subscale, model $\chi^2(1) = 8.84$, $p = .003$, overall classification rate = 61.1% (juvenile percentage correct = 69.8%, adult percentage correct = 53.8%), and Nagelkerke $R^2 = .119$. For the Peer Relations subscale, model $\chi^2(1) = 5.18$, $p = .023$, overall classification rate = 61.1% (juvenile percentage correct = 51.2%, adult percentage correct = 69.2%), and Nagelkerke $R^2 = .071$. For the Substance Use subscale, model $\chi^2(1) = 5.36$, $p = .021$, overall classification rate = 67.0% (juvenile percentage correct = 60.5%, adult percentage correct = 72.5%), and Nagelkerke $R^2 = .074$. For the Personality and Behavior subscale, model $\chi^2(1) = 10.19$, $p = .001$, overall classification rate = 63.8% (juvenile percentage correct = 46.5%, adult percentage correct = 78.4%), and Nagelkerke $R^2 = .137$. For the Attitudes and Orientations subscale, model $\chi^2(1) = 7.23$, $p = .007$, overall classification rate = 67.7% (juvenile percentage correct = 51.2%, adult percentage correct = 65.4%), and Nagelkerke $R^2 = .098$.

TABLE 10: Logistic Regression: Prior and Current Offenses and Dispositions, Peer Relations, Substance Use, Personality and Behavior, and Attitude and Orientation YLS/CMI Subscales

<i>Variable</i>	<i>B</i>	<i>SE</i>	<i>Wald</i>	<i>df</i>	<i>p</i>	<i>Exp(B)</i>
Peer Relations	0.249	.213	1.363	1	.243	1.283
Prior and Current Offenses	0.348	.183	3.623	1	.057	1.416
Substance Use	0.037	.167	0.049	1	.825	1.038
Personality and Behavior	0.229	.185	1.536	1	.215	1.258
Attitudes and Orientation	0.196	.253	0.602	1	.438	1.217
Constant	-2.219	.753	8.684	1	.003	0.109

Note. YLS/CMI = Youth Level of Service Case/Management Inventory. Model $\chi^2(5) = 17.88$, $p = .003$, overall classification rate = 67.7% (juvenile percentage correct = 58.1%, adult percentage correct = 76.0%), and Nagelkerke $R^2 = .234$.

TABLE 11: Logistic Regression and YLS/CMI Subscales

<i>Variable</i>	<i>B</i>	<i>SE</i>	<i>Wald</i>	<i>df</i>	<i>p</i>	<i>Exp(B)</i>
Prior and Current Offenses	0.353	.188	3.527	1	.060	1.424
Family and Parenting	-0.130	.166	0.614	1	.433	0.878
Education and Employment	-0.133	.140	0.898	1	.343	0.876
Peer Relations	0.409	.238	2.935	1	.087	1.505
Substance Use	0.075	.178	0.179	1	.672	1.078
Leisure and Recreation	-0.245	.339	0.521	1	.470	0.783
Personality and Behavior	0.242	.192	1.583	1	.208	1.274
Attitudes and Orientation	0.349	.279	1.567	1	.211	1.418
Constant	-1.734	.805	4.637	1	.031	0.177

Note. YLS/CMI = Youth Level of Service/Case Management Inventory. Model $\chi^2(8) = 20.88, p = .007$, overall classification rate = 69.9% (juvenile percentage correct = 65.1%, adult percentage correct = 74.0%), and Nagelkerke $R^2 = .269$.

TABLE 12: Logistic Regression: PCL:YV Total Score, YLS/CMI Subscales, and Alcohol and Drug MAYSI Subscale

<i>Variable</i>	<i>B</i>	<i>SE</i>	<i>Wald</i>	<i>df</i>	<i>p</i>	<i>Exp(B)</i>
Alcohol and Drug	0.305	.165	3.402	1	.065	1.356
PCL:YV	-0.071	.092	0.589	1	.443	0.932
Prior and Current Offenses	0.388	.200	3.744	1	.053	1.474
Family and Parenting	-0.199	.177	1.266	1	.260	0.820
Education and Employment	-0.135	.147	0.847	1	.357	0.873
Peer Relations	0.398	.247	2.599	1	.107	1.489
Substance Use	-0.275	.280	0.964	1	.326	0.759
Leisure and Recreation	-0.297	.354	0.706	1	.401	0.743
Personality and Behavior	0.249	.204	1.479	1	.224	1.282
Attitudes and Orientation	0.604	.324	3.481	1	.062	1.830
Constant	-1.348	.877	2.364	1	.124	0.260

Note. PCL:YV = Psychopathy Checklist: Youth Version; YLS/CMI = Youth Level of Service/Case Management Inventory; MAYSI = Massachusetts Youth Screening Instrument. Model $\chi^2(9) = 24.55, p = .006$, overall classification rate = 73.6% (juvenile percentage correct = 74.4%, adult percentage correct = 72.9%), and Nagelkerke $R^2 = .316$.

remained positively associated with certification status but did not increase the accuracy of the prediction beyond the Alcohol and Drug subscale alone.

It should be noted that an analysis that included all nine subscales of the MAYSI did not yield a significant model, model $\chi^2(9) = 14.20, p = .12$, overall classification rate = 62.4%, variance = 19%. An earlier

analysis using the MAYSI total score as the predictor variable produced a significant model. Although the MAYSI total score had an identical classification rate as the Alcohol and Drug subscale, it should be noted that psychometrically, there is no MAYSI total score. The variable was created for this study as a proxy measure of general emotional distress. Thus, these findings suggest that the Alcohol and Drug subscale is the best predictor of remaining in the criminal justice system available from the MAYSI.

Each of the YLS/CMI subscales was regressed independently. The results of these analyses suggest that the Prior and Current Offenses and Dispositions [model $\chi^2(1) = 8.84, p = .003$, overall classification rate = 61.1%, variance = 12%], Peer Relations [model $\chi^2[1] = 5.18, p = .023$, overall classification rate = 61.1%, variance = 7%], Substance Use [model $\chi^2[1] = 5.36, p = .021$, overall classification rate = 67.0%, variance = 7%], Personality and Behavior (model $\chi^2[1] = 10.19, p = .001$, overall classification rate = 63.8%, variance = 14%), and Attitude and Orientation [model $\chi^2[1] = 7.23, p = .007$, overall classification rate = 67.7%, variance = 10%] subscales predicted certification status. Higher scores on each of these subscales were positively related to continued prosecution in the criminal justice system.

Next, all five subscales were entered into a regression to explore the predictive utility for a model that included these five subscales. The results of this analysis also produced a significant model, model $\chi^2(5) = 17.88, p = .003$, overall classification rate = 67.7%, variance = 23%, and each of the five subscales in this model remained positively associated with certification status.

Finally, all eight of the YLS/CMI subscales were entered into a regression model. This analysis produced a significant model, model $\chi^2(8) = 20.88, p = .007$, overall classification rate = 69.9%, variance = 27%, and the Prior and Current Offenses and Disposition, Peer Relations, Substance Use, Personality and Behavior, and Attitudes and Orientation subscales were positively related to certification status within the model.

This suggests that higher scores on these scales were positively related to remaining in the criminal justice system. Conversely, the Family Circumstances and Parenting, Education and Employment, and Leisure Recreation subscales were negatively related to certification status. This suggests that higher scores on these subscales were

related to decertification back to the juvenile justice system. An earlier analysis using the YLSCMI total score as the predictor variable produced a significant model, model $\chi^2(1) = 7.50$, $p = .006$, overall classification rate = 67.37%, and the overall classification rate for the YLSCMI total score model was slightly lower than the eight-subscale model. Therefore, these findings suggest that when compared to the YLSCMI total score, the YLSCMI eight-subscale model is a more sensitive predictor of certification status.

An earlier analysis suggested that the PCL:YV total score was also a robust predictor of certification status. A final regression was conducted to analyze the relationship between PCL:YV total score and the most robust prediction models provided by the YLS/CMI and MAYSI, respectively. Accordingly, all eight subscales of the YLS/CMI, the Alcohol and Drug scale of the MAYSI, and PCL:YV total score were entered into a regression equation. The results of this analysis produced a significant model, model $\chi^2(10) = 24.55$, $p = .006$, overall classification rate = 73.6%, and accounted for 32% of the variance between the dependent and independent variables.

A number of relationships were noted within the model. For example, the PCL:YV total score, Family and Parenting Circumstances, Education and Employment, Substance Use, and Leisure and Recreation subscales of the YLS/CMI were negatively related to certification status. This suggests that these variables decreased the likelihood of continued prosecution in the criminal justice system. Conversely, the Alcohol and Drug subscale of the MAYSI and the Prior and Current Offenses and Dispositions, Peer Relations, Personality and Behavior, and Attitudes and Orientation subscales of the YLS/CMI increased the likelihood of continued prosecution in the criminal justice system. When compared to previous models considered in this study, this 10-factor model proved to be the most robust predictor of certification status.

DISCUSSION

This study investigated the relationship between risk factors, as operationalized by the PCL:YV, the YLS/CMI, and the MAYSI, and certification status. One important goal was to investigate certification

outcome as a function of the risk factors identified in the literature on juvenile recidivism. In addition, this study integrated the use of three instruments (the PCL:YV, the MAYSI, and the YLS/CMI) to assess the strongest predictors of certification status. Generally, this study provided some empirical support for the use of these instruments in the juvenile justice system by demonstrating that these instruments have some utility in predicting certification status.

This study has several potential implications. Significant positive relationships were found between certification status and the PCL:YV, YLS/CMI, and MAYSI total scores; age; the Alcohol and Drug and Angry and Irritable subscales of the MAYSI; and the Prior and Current Offenses and Dispositions, Peer Relations, Substance Abuse, Personality and Behavior, and Attitudes and Orientation subscales of the YLS/CMI. Further analyses suggested specific factors that might be useful in distinguishing participants who were decertified from those who were not and in predicting certification status. For example, age and number and magnitude of risk factors (as measured by the YLS/CMI) distinguished those who remained in the criminal justice system from those who were decertified to the juvenile system. Older participants with a greater number and magnitude of risk factors were more likely to remain in the criminal justice system. Specific risk factors associated with continued certification in the adult criminal justice system were prior and current offenses and personality and behavioral functioning. This suggests that participants who remained in the adult criminal justice system had a higher level of past and current involvement with the criminal justice system and higher risk and treatment-related needs in the area of personality and behavior.

The results of this study also support the utility of the PCL:YV, YLS/CMI, and MAYSI as global predictors of certification status; each instrument alone predicted certification status, but the three instruments in combination did not predict certification status with better accuracy than the YLS/CMI total score alone. It is interesting that the PCL:YV, YLS/CMI, and MAYSI total score model mentioned immediately above was not the most accurate for predicting continued prosecution in the criminal justice system. A model incorporating the PCL:YV total score, the subscales of the YLS/CMI, and the Alcohol and Drug subscale of the MAYSI increased the predictive accuracy of

the model and also accounted for more variance in the outcome measure. Within this final model, the PCL:YV total score and the Family and Parenting Circumstances, Education and Employment, Substance Use, and Leisure and Recreation subscales of the YLS/CMI were the most important subscales for predicting decertification to the juvenile justice system. Conversely, the Alcohol and Drug subscale of the MAYSI and the Prior and Current Offenses and Dispositions, Peer Relations, Personality and Behavior, and Attitudes and Orientation subscales of the YLS/CMI were the most important subscales for predicting continued prosecution in the criminal justice system.

These findings suggest that certain risk factors that appear relevant to decertification are indeed being considered by courts in making this decision. The risk factors measured by the PCL:YV, the YLS/CMI, and the MAYSI, in particular, have a modest but statistically significant relationship with the legal decision concerning whether an adolescent defendant remains in the adult system or is transferred back to the juvenile system. It is also apparent, however, that courts' decision making on this question is somewhat independent of these factors and that establishing a stronger predictive relationship, the task of future researchers, will involve incorporating a broader range of predictors than we have used in the present study.

The accurate identification of factors associated with adult certification could be valuable in several ways. First, the validation of these risk factors through empirical research, determining the extent to which established risk factors for reoffending are used by courts in making decertification and transfer decisions, could offer guidance for judicial decision making, enhancing the degree of informed decision making in such cases. Second, the validation of risk factors associated with certification would allow policy makers to refine existing laws that provide a basis for identifying the highest at-risk juvenile offenders. Finally, the validation of these risk factors could inform and improve standards of practice for forensic practitioners conducting these types of forensic assessments for the criminal justice system.

These results should be interpreted in the context of the study's limitations. First, the sample was relatively small and was selected through referral to the university clinic through the public defender's office. Sampling was not random, therefore, because we sampled neither privately referred cases nor evaluations that had been conducted

by other forensic clinicians in the area. Second, PCL:YV and YLSCMI scores were generated using only a file review procedure, which might not provide for as accurate an assessment as a combination of interview and file review ratings. In this study, the mean score for the PCL:YV was notably lower than those reported by other investigators who used the PCL-R with adolescents (Brandt, 1993; Brandt, Kennedy, Patrick, & Curtin, 1997; Chandler & Moran, 1990; Dodds, 2000; Forth et al., 1996; Trevethan & Walker, 1989). Although interrater reliability was adequate, this discrepancy suggests that the PCL:YV scores are unusually low given the sample in question.

Future research in this area should include continued reliability and validity studies with the PCL:YV, the YLS/CMI, and the MAYSI (now the MAYSI-2). Each of these instruments is less than a decade old, and the findings should be replicated and explored further with this type of population. Specifically, the results suggest that the YLS/CMI could distinguish between those who were decertified and those who were not based on certain risk factors. This suggests that courts and forensic clinicians may be appropriately focusing on relevant risk factors and risk-relevant needs in evaluating juveniles for decertification decisions.

NOTE

1. Act 33 reduced the jurisdiction of the juvenile justice system by excluding juveniles who met the legislative combination of offense charges and prior history. This was accomplished by altering the definition of a delinquent act. By altering this definition, the Pennsylvania legislature changed which cases are initially brought into the juvenile justice system. Cases that do not fall within the jurisdiction of the juvenile justice system are sent directly to the adult criminal justice system (Juvenile Act of 2002).

Act 33 altered the definition of a delinquent act by excluding two classes of juveniles. The first class contains juveniles 15 years of age and older charged with an enumerated offense and with using a deadly weapon during the commission of the alleged offense. Enumerated offenses include rape, involuntary deviate sexual intercourse, aggravated assault, robbery, robbery of a motor vehicle, aggravated indecent assault, kidnapping, voluntary manslaughter, and an attempt or conspiracy to commit murder or any of these enumerated offenses (Juvenile Act of 2002).

The second class includes juveniles 15 years of age and older who are charged with an enumerated offense and who have previously been adjudicated as a delinquent for committing one of the enumerated offenses. The enumerated offenses for this class include rape, involuntary deviate sexual intercourse, robbery, robbery of a motor vehicle, aggravated indecent assault, kidnapping, voluntary manslaughter, and an attempt, conspiracy, or solicitation of any of the enumer-

ated offenses. Any juvenile 15 years of age or older who fits within one of these two classes is subject to the adult criminal justice system (Juvenile Act of 2002).

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